IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: :

Chae-Whan Lim et al.   :   Group Art Unit: 2624

Serial No.: 10/657,206   :   Examiner: Alex Kok Soon Liew

Filed: September 9, 2003   :   Confirmation No.: 9142

                                 :
For: APPARATUS AND METHOD FOR   :
     RECOGNIZING CHARACTER   :
     IMAGE FROM IMAGE SCREEN   :

ARGUMENTS FOR CONSIDERATION FILED CONCURRENTLY

WITH PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

        This communication is submitted in response to the final office action of May 8,

2009. Applicants respectfully request consideration of the following:

Remarks/Arguments:

        In the final office action mailed May 8, 2009, the Examiner rejects claims 1, 2, 5,

7, 15, 16, 19, and 20 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S.

Patent No. 6,334,003 to Yokota et al. (*Yokota*) in view of U.S. Patent No. 5,465,304 to

Cullen et al. (*Cullen*). Applicants respectfully traverse this rejection.

Claim Rejections – 35 U.S.C. § 103(a)

Applicants' apparatus as recited in independent claim 1 comprises, *inter alia*, "a pre-processor for analyzing pixels of a document image in the recognition mode, classifying the document image into at least one Character Block (CB) and at least one Background Block (BB) on the basis of a result of the analysis, binarizing pixels of the BB and generating a pre-processed document image; a character recognizer for recognizing the pre-processed document image and converting the recognized pre-processed document image into character data; a recognition error processor for correcting or replacing erroneously recognized character data selected by the input unit with character data output by the input unit in the correction mode; a database for storing the recognized character data in the storage mode".

Applicants' method as recited in independent claim 15 comprises, *inter alia*, "designating an operating mode for document recognition; analyzing pixels of the document image in the document recognition mode, classifying the document image into at least one Character Block (CB) and at least one Background Block (BB) on the basis of a result of the analysis, binarizing pixels of the BB and generating a pre-processed document image; recognizing the pre-processed document image and converting the recognized pre-processed document image into character data; selecting erroneously recognized character data, and correcting or replacing the erroneously recognized character data with input character data in a correction mode; and storing the recognized character data in a storage mode."

The Examiner alleges that *Yokota* discloses the step of recognizing a pre-processed document image and converting the recognized pre-processed document image into character data (citing Fig. 3, A2 of *Yokota*). Applicants respectfully disagree with the Examiner's analysis.

The Examiner should first note that the Examiner has already admitted that *Yokota* does not disclose the step of generating a pre-processed document image.

Secondly, exemplary embodiments of the present invention disclose that an image of a document is detected using a camera embedded in a terminal device (such as a PDA), a character image contained within the detected image is pre-processed by a pre-processor so that a clear character image can be produced, the pre-processed character image is recognized by the character recognizer, and the recognized character image is converted into character data. Erroneously recognized character data is corrected using various devices such as a stylus pen, a speech recognizer, a handwritten character recognizer, a soft keypad, etc., and the character data is stored in a desired storage area of a database. (See page 9, lines 2-9 in the specification of the instant application).

Nowhere does *Yokota* teach or suggest generating a pre-processed document image, nor does *Yokota* teach or suggest recognizing a pre-processed document image and converting the recognized pre-processed document image into character data.

Yokota merely discloses executing character recognition with respect to a character region. Applicants submit that *Yokota's* disclosure of executing character recognition with respect to a character region has nothing to do with generating a pre-processed document image, recognizing the pre-processed document image and converting the recognized pre-processed document image into character data.

The Examiner asserts that *Yokota* fails to disclose analyzing pixels of a document image in the document recognition mode, classifying a document image into at least one Character Block (CB) and at least one Background Block (BB) on the basis of a result of the analysis, binarizing pixels of a BB, and generating a pre-processed document image. The Examiner then alleges that *Cullen* discloses the limitations recited above (citing column 7, lines 46-53 and Figs. 2A and 2B of *Cullen*). Applicants respectfully disagree with the Examiner's analysis.

The Examiner cites column 7, lines 46-53 as well as Figs. 2A and 2B of *Cullen* to meet "binarizing pixels of the BB and generating a pre-processed document image". The Examiner should first note that Figs. 2A and 2B of *Cullen* merely disclose a document segmentation system wherein a boundary rectangle is used to describe the features on a document, which will define the bounds of a pattern, e.g. a word. *Cullen* discloses that a rectangle 220 provides a spatial boundary for the word "house" 221 and
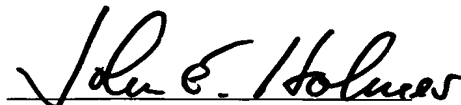
that a rectangle 230 provides a spatial boundary for the sentence "The house is white" 231. (See Col. 5, lines 50-57 of *Cullen*). The Examiner should then note that *Cullen's* disclosure above is different from compression of bit-mapped representation. More particularly, nowhere does *Cullen* teach or suggest classifying a document image into at least one Character Block (CB) and at least one Background Block (BB) on the basis of a result of the analysis, binarizing pixels of the BB, and generating a pre-processed document image. Applicants submit that the Examiner makes the assumption that a document image is classified into at least one Character Block (CB) and at least one Background Block (BB) on the basis of a result of the analysis by reading into the *Cullen* reference. Assuming, *arguendo*, that *Cullen* teaches that a document image is classified into a Character Block (CB) and a Background Block (BB), nowhere does *Cullen* teach or suggest that the document image classification is carried out on the basis of a result of a document image pixel analysis. In addition, nowhere does *Cullen* teach or suggest a Background Block (BB), let alone that pixels of a Background Block (BB) are binarized. If the Examiner believes that *Cullen* teaches these features, it is respectfully requested that the Examiner point out the specific language in *Cullen* wherein these are taught.

For at least these reasons, the claim subject matter of independent claims 1 and 15 of the instant application are distinguished from *Yokota* and *Cullen*.

Accordingly, Applicants' independent claims 1 and 15, as well as claims 2-8 and 16-22 which depend therefrom, are patentable at least for these reasons. Withdrawal of the rejections under 35 U.S.C. § 103(a) is respectfully requested.

In view of the above, it is believed that there is at least one or more errors or omissions in the Examiner's rejections.

Respectfully submitted,

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Dated: **August 10, 2009**

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